Mr. Steven C. Smith
Newton County Landfill
2266 East 500 South Road
Brook, Indiana 46501

Re: **111-11053**
Significant Source Modification to:
Part 70 permit No.: **T111-9725-00017**

Dear Mr. Smith:

Newton County Landfill was issued Part 70 operating permit T111-9725-00017 on March 9, 1999, for a municipal solid waste landfill. An application to modify the source was received on June 11, 1999. Pursuant to 326 IAC 2-7-10.5 the following emission units are approved for construction at the source:

Landfill gas collection system, identified as unit 3, consisting of a skid mounted Vertical Vaporator unit and a 90 MMBtu/hr enclosed flare.

The following construction conditions are applicable to the proposed project:

General Construction Conditions

1. The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Management (OAM).

2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

3. Effective Date of the Permit
Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.

4. Pursuant to 326 IAC 2-1.1-9 and 326 IAC 2-7-10.5(i), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.

6. Pursuant to 326 IAC 2-7-10.5(l) the emission units constructed under this approval shall not be placed into operation prior to revision of the source's Part 70 Operating Permit to incorporate the required operation conditions.

The proposed operating conditions applicable to these emission units are attached to this Source Modification approval. These proposed operating conditions shall be incorporated into the Part 70 operating permit as an administrative amendment in accordance with 326 IAC 2-7-10.5(l)(1) and 326 IAC 2-7-11.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter call (800) 451-6027, press 0 and ask for Autumn Marker or extension (3-0242), or dial (317) 233-0242.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

Attachments
AMM
cc: File - Newton County
U.S. EPA, Region V
Newton County Health Department
Air Compliance Section Inspector - Eric Courtright
Compliance Data Section - Karen Nowak
Administrative and Development - Janet Mobley
Technical Support and Modeling - Michele Boner

Indiana Department of Environmental Management
Office of Air Management

Addendum to the
Technical Support Document for a Part 70 Operating Permit

Source Name:	Newton County Landfill
Source Location:	2266 East 500 South Road, Brook, Indiana 46501
County:	Newton
SIC Code:	4953
Operation Permit No.:	T111-9725-00017
Significant Source Modification No.:	111-11053-00017
Permit Reviewer:	Autumn M. Marker

On August 11, 1999, the Office of Air Management (OAM) had a notice published in the Newton County Enterprise, Kentland, Indiana, stating that Newton County Landfill had applied for a Significant Source Modification to install a landfill gas control system. The notice also stated that OAM proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

On September 10, 1999, EMCON on behalf of Newton County Landfill submitted comments on the Significant Source Modification. The summary of the comments is as follows. (Deleted language appears as ~~strikeouts~~ and the new language is **bolded**.)

Comment 1:

The emissions calculations need to be checked, in detail, to ensure the calculations were done correctly. While *all* emissions calculations cannot be verified at this time, one error was found on page 14 in Appendix A of the Title V (heat input capacity is overstated for open flares due to Btu assumption for landfill gas).

Response 1:

The emissions calculations located in the Technical Support Document (TSD) for this Significant Source Modification were done correctly. The comment is regarding calculations done in the actual Title V permit. This addendum to the TSD for the Significant Source Modification is used to address problems in the TSD for the Significant Source Modification.

Comment 2:

TSD page 3: the VOC major source threshold is listed as a range; this is ambiguous. Please revise.

Response 2:

The range that is stated in the TSD is correct. The approximate VOC emissions from the landfill based on calculations from the Landfill Gas Emissions Model are 130 tons per year in year 2004. The OAM prefers that the TSD reflect that which was public noticed. The TSD will not be changed. There was, however, a wrong number used in the calculations for VOC emissions exiting the flare. The 232 ppmv that was used for the VOC concentration in the inlet gas was derived from the default value of 595 ppmv. The VOC concentration in the inlet gas should have been derived from the source specific Tier II

analysis number that was provided by the source and was used in other calculations. The following calculations and table have been revised to reflect the newly calculated numbers. As stated before the TSD will not be reflect these changes.

VOC Emissions from the Landfill Gas and Leachate

3000 scfm * $\frac{\text{lb-mole ER}}{0.7302\ ft^3\text{-atm}}$ * $\frac{1\ atm}{520ER}$ * $\frac{\textbf{318.36}\ ppmv}{1{,}000{,}000}$ * $\frac{86\ lb}{lb\text{-mole}}$ * $\frac{60\ min}{1\ hour}$ = **12.98** lb/hr VOC from landfill gas

VOC emissions from landfill leachate = 0.52 lb/hr

12.98 lb/hr + 0.52 lb/hr = **13.5** lb/hr total = **59.13** tons/year potential emissions

98% destruction efficiency (from the landfill gas control system) * **59.13** tons/year = **1.18** tons/year

Potential to Emit of Modification After Issuance

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO_2	VOC	CO	NO_X	HAPs
landfill		--	--	**59.13** (before 98% destruction efficiency)	--	--	--
four (4) passive flares		--	--	--	81.61	15.0	--
landfill gas collection system		6.13	7.4	**1.18** (after 98% destruction efficiency)	158	39.4	30.1
TOTAL		6.13	7.4	**1.18**	239.61	54.4	30.1

Comment 3:

TSD page 4, *Federal Rule Applicability*, 1st paragraph, 3rd line down: Please change "prior to the requirement" to "being subject to the requirement."

Response 3:

For clarification, the third line of the first paragraph should have reflected the above requested change, however, the OAM prefers that the TSD reflect that which was public noticed. The TSD will not be changed.

Comment 4:

TSD page 7, *Compliance Requirements,* 3rd paragraph: This section lists the compliance monitoring requirements applicable to the modification. However, no mention is made as to when these requirements become effective (e.g, at startup or after it becomes applicable to Subpart WWW). Please revise.

Response 4:

The compliance requirements for the landfill gas control system would be applicable when the source would have been required to install the system. The OAM prefers that the TSD reflect that which was public noticed. The TSD will not be changed.

On August 30, 1999, Bernard and Judith Schultz submitted comments on the Significant Source Modification.

Comment 5:

Concerns for the construction of a landfill gas collection system, and how it will impact our health in this community.

Response 5:

The federal law (40 CFR 60, Subpart WWW) governing landfills is applicable to those landfills meeting the specified volume or mass threshold. The Newton County Landfill exceeds the mass and volume threshold and is, therefore, subject to the requirements of 40 CFR 60, Subpart WWW. Once the landfill meets the volume or mass threshold then the potential emissions from the landfill must be evaluated. Potential emissions from the landfill for non-methane organic compounds must exceed 50 megagrams per year before a landfill gas control equipment design plan and installation of landfill gas control equipment are required by the federal regulation. Newton County Landfill is installing the landfill gas control system prior to being required by the federal regulation. Although there are some pollutants as a result of the combustion from the flare, the landfill gas control system is an active control system as required by the federal regulation. The system that Newton County is going to operate will control both landfill gas and landfill leachate. The landfill gas control system has a control efficiency of over 90% for many pollutants. Therefore, even though there will be emissions from the flare that is being installed at the landfill, emissions of many pollutants will be substantially decreased through utilization of this system. This reduction will in fact occur ahead of the timeframe that is outlined in the federal regulation.

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for a Part 70 Significant Source Modification

Source Background and Description

Source Name:	**Newton County Landfill**
Source Location:	**2266 East 500 South Road, Brook, IN 46501**
County:	**Newton County**
SIC Code:	**4953**
Operation Permit No.:	**111-9725-00017**
Operation Permit Issuance Date:	**March 9, 1999**
Significant Source Modification No.:	**111-11053-00017**
Permit Reviewer:	**Autumn M. Marker**

The Office of Air Management (OAM) has reviewed a modification application from Newton County Landfill relating to the construction of the following emission units and pollution control devices:

(a) Landfill gas collection system, identified as unit 3, consisting of a skid mounted Vertical Vaporator unit and a 90 MMBtu/hr enclosed flare.

History

On June 11, 1999, Newton County Landfill submitted an application to the OAM requesting to add a landfill gas collection system to their existing landfill. Newton County Landfill was issued a Part 70 permit on March 9, 1999.

Enforcement Issue

(a) IDEM is aware that equipment has been constructed prior to receipt of the proper permit.

(b) IDEM is reviewing this matter and will take appropriate action. This proposed approval is intended to satisfy the requirements of the construction permit rules.

Recommendation

The staff recommends to the Commissioner that the Part 70 Significant Source Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on June 11, 1999. Additional information was received on June 25, 1999.

Emission Calculations

See Appendix A, page 10, of this document for detailed emissions calculations.

Potential To Emit of Modification

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any

physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA."

This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM-10	6.13
SO_2	7.4
VOC	1.14
CO	158
NO_x	39.4

HAP's	Potential To Emit (tons/year)
Toluene	4.7
Methyl Ethyl Ketone	1.4
Hydrogen Sulfide	2.3
Hydrogen Chloride	17.1
TOTAL HAPs	44.02

Justification for Modification

The Part 70 Operating permit is being modified through a Part 70 Significant Source Modification. This modification is being performed pursuant to 326 IAC 2-7-10.5(f)(7) any modification with a potential to emit greater than or equal to one hundred (100) tons per year of carbon monoxide (CO). The approval for the source to operate the proposed equipment will be issued under an Administrative Amendment (No. 111-11133) pursuant to 326 IAC 2-7-11.

County Attainment Status

The source is located in Newton County.

Pollutant	Status
PM-10	attainment
SO_2	attainment
NO_2	attainment
Ozone	attainment
CO	attainment
Lead	attainment

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC and NO_X emissions are considered when evaluating the rule applicability relating to the ozone standards. Newton County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Newton County has been classified as attainment or unclassifiable for all pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(c) Fugitive Emissions
Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive PM emissions are not counted toward determination of PSD and Emission Offset applicability.

Source Status

Existing Source PSD or Emission Offset Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	less than 100
PM-10	less than 100
SO_2	less than 100
VOC	greater than 100 less than 250
CO	81.61
NOx	15.0

(a) This existing source is not a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not one of the 28 listed source categories.

(b) These emissions are based upon calculations from the Part 70 permit (T111-9725-000017) issued March 9, 1999.

Potential to Emit of Modification After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Part 70 source modification.

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO_2	VOC	CO	NO_X	HAPs
landfill		--	--	56.80 (before 98% destruction efficiency)	--	--	--
four (4) passive flares		--	--	--	81.61	15.0	--
landfill gas collection system		6.13	7.4	1.14 (after 98% destruction efficiency)	158	39.4	30.1
TOTAL		6.13	7.4	0.87	239.61	54.4	30.1

This modification to an existing minor stationary source is not major because the emission increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Federal Rule Applicability

The landfill and the landfill gas collection system is subject to the New Source Performance Standard, 326 IAC 12, (40 CFR 60.750, Subpart WWW). The landfill gas collection system in this modification will be installed prior to the source prior to the requirement in New Source Performance Standard, 40 CFR 60.750, Subpart WWW. Therefore, at such time as the source would have been required to install the gas collection system, the gas collection system will need to comply with 40 CFR 60.750, Subpart WWW.

(1) Pursuant to 40CFR 60.752, a municipal solid waste landfill with a design capacity greater than 2.5 million megagrams (Mg) shall either comply with 40CFR 60.752 (b)(2) or calculate the non methane organic compound emission (NMOC) rate for the landfill using the procedures specified in 40CFR 60.754. (The Permittee's initial design capacity report was submitted on June 13, 1996. The Permittee's initial NMOC report was submitted on August 11, 1997. The Permittee's design plan was submitted on March 12, 1998.)

If the Permittee has calculated non methane organic compound (NMOC) emissions less than 50 megagrams (Mg) per year, the Permittee shall:

(a) Submit an annual NMOC report to the Office of Air Management (OAM);

and

(b) Recalculate the non methane organic compound (NMOC) emission rate annually using the procedures specified in 40CFR 60.754(a)(1) until such time as the calculated non methane organic compound (NMOC) emission rate is equal to or greater than 50 megagrams (Mg) per year or the landfill is closed.

If the Permittee has calculated non methane organic compound (NMOC) emissions of greater than 50 megagrams per year, the Permittee shall:

(a) Submit a collection and control system design plan prepared by a professional engineer that meets the requirements of 40CFR 60.752 (b)(2)(ii) to the Office of Air Management (OAM) within one year after calculated non methane organic compound (NMOC) emissions of greater than 50 megagrams (Mg) per year. The design plan shall include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, record keeping or reporting provisions of 40CFR 60.753 through 40CFR 60.758 that are proposed by the Permittee. The design plan shall either conform with specifications for active collection systems in 40 CFR 60.759 or include a demonstration to the Office of Air Management's (OAM) satisfaction of the sufficiency of the alternative provisions to 40 CFR 60.759. The Office of Solid and Hazardous Waste Management (OSHWM) shall review the design plan and can either approve, disapprove, or request additional information be submitted by the Permittee.

(b) Install a collection and control system within eighteen months of the submittal of the design plan that effectively captures the gas generated within the landfill.

An active collection system shall:

(i) Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment.

(ii) Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of five years or more if active or two years or more if closed or at final grade.

(iii) Collect gas at a sufficient extraction rate.

(iv) Be designed to minimize off-site migration of subsurface gas.

A passive collection system shall:

(i) Comply with the provisions specified in paragraphs A, B, and D above.

(ii) Be installed with liners on the bottom and all sides in all areas in which gas is to be collected. The liners shall be installed as required under §258.40 of the title.

(c) Route all collected gas to an open flare collection system that is designed and operated in accordance with 40CFR 60.18.

(d) Operate the collection and control device installed to comply with this subpart in accordance with the provisions of 40CFR 60.753, 60.755, and 60.756.

(e) Cap or remove the collection and control system provided that the following conditions are met:

(i) The landfill shall be no longer accepting solid waste and be permanently closed under the requirements of §258.60 of this title. A closure report shall be submitted to the Office of Solid and Hazardous Waste Management (OSHWM) as provided in 40CFR 60.757 (d);

(ii) The collection and control system shall have been in operation a minimum of fifteen years;

and

(iii) The calculated non methane organic compound (NMOC) gas produced by the landfill shall be less than 50 megagrams (Mg) per year on three consecutive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart.

(2) In order to comply with 40CFR 60.752 (b)(2)(ii) the Permittee shall:

(a) Operate the collection system such that gas is collected from each area, cell, or group of cells in the municipal solid waste landfill in which solid waste has been in place for five years if active or 2 years or more if closed or at final grade.

(b) Operate the collection system with negative pressure at each wellhead except under the following conditions:

(i) Fire or increased well temperature. The Permittee shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual reports as provided in 40CFR 60.757(f)(1).

(ii) Use of a geomembrane or synthetic cover. The Permittee shall develop acceptable pressure limits in the design plan.

(iii) A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes shall be approved by the Office of Air Management (OAM).

(c) Operate each interior wellhead in the collection system with a landfill gas temperature less than 55EC and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. The Permittee may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.

(i) The nitrogen level shall be determined using Method 3C, unless an alternative method is established as allowed by 40CFR 60.752 (b)(2)(i).

(ii) Unless an alternative test method is established as allowed by 40CFR 60.752 (b)(2)(i), the oxygen shall be determined by an oxygen meter using Method 3A except that; the span shall be set so that the regulatory limit is between 20 and 50 percent of the span; a data recorder is not required; only two calibration gases are required, a zero and span, and ambient air may be used as the span; a calibration error check is not required; the allowable sample bias, zero drift, and calibration drift are ±10 percent.

(d) Operate the collection system so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. To determine if this level is exceeded, the Permittee shall conduct surface testing around the perimeter of the collection area along a pattern that traverses the landfill at 30 meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The Permittee may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30 meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing.

(e) Operate the system such that all collected gases are vented to a control system designed and operated in compliance with 40CFR 60.752(b)(2)(iii). In the event the collection or control system is inoperable, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within one hour.

(f) Operate the control system at all times when the collected gas is routed to the system.

(g) If monitoring demonstrates that the operational requirement in 40CFR 60.753(b), (c), or (d) are not met, corrective action shall be taken as specified in 40CFR 60.752(a)(3) through (5) or 40CFR 60.755(c). If corrective actions are taken as specified in 40CFR 60.755, the monitored exceedance is not a violation of the operational requirements in 40CFR 60.753.

There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this proposed modification.

State Rule Applicability - Individual Facilities

There are no state rules applicable to this individual facility.

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAM, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements applicable to this modification are as follows:

The Permittee complying with 40CFR 60.752 (b)(2)(i)(B) has applicable compliance monitoring conditions with regard to an active collection system as specified below:

(1) The Permittee shall install a sampling port and a thermometer or other temperature measuring device at each wellhead; measure the gauge pressure in the gas collection header on a monthly basis; monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis; and monitor temperature of the landfill gas on a monthly basis.

The municipal solid waste landfill has applicable compliance monitoring conditions with regard to the flares as specified below:

(1) The Permittee shall install, calibrate, maintain, and operate according to the manufacturer's specifications a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame and a device that records flow to or bypass of the flare. The Permittee shall either install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every fifteen minutes; or secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

The Permittee shall comply with any applicable monitoring conditions pursuant to 40CFR 60.756.

These monitoring conditions are necessary because the flares at the municipal solid waste landfill and the active collection system must operate properly to ensure compliance with 40CFR 60, Subpart WWW (Standards of Performance for Municipal Solid Waste Landfills).

Conclusion

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Significant Source Modification No. 111-11053-00017.

Appendix A

Flare Emissions

LFG Heating Value: 500 Btu/scf (based on the heating value of the methane content of landfill gas)

Maximum Flare Capacity: 3000 scfm (1 enclosed flare in the Vertical Vaporator System)

Heat Input Capacity:

$$\frac{3000cf}{m} * \frac{60\ m}{1hr} * \frac{500Btu}{cf} * \frac{MM}{10^6} = 90\ MMBtu/hr$$

Emission Factors:

PM_{10} = 0.00102 lb/hr/dscfm [1,500scfm (methane) * 8% (moisture) = 1,380 dscfm]

NO_x = 0.100 lb/MMBtu

CO = 0.40 lb/MMBtu

Potential Emissions in Tons Per Year:

$$PM_{10} = 1{,}380\ dscfm * \frac{0.0012\ lb/hr}{dscfm} = 1.40\ lb/hr = 6.13\ tons/yr$$

$$NO_x = \frac{0.100\ lb}{MMBtu} * \frac{90MMBtu}{hr} * \frac{8760hr}{yr} * \frac{ton}{2000lbs} = 39.42\ tons/yr$$

$$CO = \frac{0.40lb}{MMBtu} * \frac{90MMBtu}{hr} * \frac{8760hr}{yr} * \frac{ton}{2000lbs} = 157.68\ tons/yr$$

NO_x and CO emission factors taken from flare manufacturer's guarantee. The manufacturer's emission factors were the most conservative number available. The PM10 emission factor taken from AP-42, 2.4-5, Emission Rates for Secondary Compounds Exiting Control Devices.

VOC Emissions from the Landfill Gas and Leachate

$$3000\ scfm * \frac{lb\text{-}mole\ ER}{0.7302\ ft^3\text{-}atm} * \frac{1\ atm}{520ER} * \frac{232\ ppmv}{1{,}000{,}000} * \frac{86\ lb}{lb\text{-}mole} * \frac{60\ min}{1\ hour} =$$ 9.46 lb/hr VOC from landfill gas

VOC emissions from landfill leachate = 0.52 lb/hr

9.46 lb/hr + 0.52 lb/hr = 9.98 lb/hr total = 43.71 tons/year potential emissions

98% destruction efficiency (from the landfill gas control system) * 43.71 tons/year = 0.87 tons/year